

Claim 18, line 2, delete "substantially".

Claim 22, ~~1~~ines 2-3, delete "an effective amount
of".

Claim 23, line 13, delete "filler" and insert
--aggregate-- in lieu thereof.

Claim 24, line 2, delete "substantially".

Claim 26, line 10, delete "filler" and insert
--aggregate-- in lieu thereof.

Claim 27, lines 2-3, delete "an effective amount
of".

Please cancel claims ~~12-16~~ and ~~28-37~~ without
prejudice.

REMARKS

I. STATUS OF THE APPLICATION.

This is in response to the official action of September 8, 1995 wherein claims 12-16 and 28-37 were withdrawn from the application pursuant to a restriction requirement; claims 1, 2, 7, 17, 18, 22-24, 26, and 27 were rejected under 35 U.S.C. §112, second paragraph, as indefinite; claims 1-11 and 17-27 were rejected under 35 U.S.C. §103 as obvious over a Bentur et al. article in view of Kosmatka et al., "Design and Control of Concrete Mixtures," PCA, Thriteenth Ed., 1988, Francis et al., U.S. Patent No. 5,439,518, and Jorgenson, U.S. Patent No. 4,159,912; claims 1-15 were rejected under 35 U.S.C. §103 as obvious over Harris, U.S. Patent No. 4,494,990 in view of the Francis et al., Kosmatka et al. and Jorgenson publications; claims 1-5, 7, 11, and 17-27 were provisionally rejected under the doctrine of obviousness-

type double patenting in view of copending U.S. application Ser. No. 08/253,333; claim 6 was provisionally rejected under obviousness-type double patenting grounds over claims 1-15 of U.S. application Ser. No. 08/253,333 in view of the Francis et al. patent; and claims 8-11 were provisionally rejected under obviousness-type double patenting grounds over claims 1-15 of U.S. Application Ser. No. 08/253,333 in view of the Jorgenson and Francis et al. patents.

The rejections are traversed and reconsideration is requested.

Applicants affirm the election of claims 1-11 and 17-27 made via telephone conference between the applicants' attorney Cynthia Schaller and the examiner on August 31, 1995.

Claims 12-16 and 28-37 have been canceled without prejudice.

Claims 1, 2, 7, 17, 18, 22, 23, 24, 26, and 27 have been amended.

Claims 1-11 and 17-27 are pending.

This response is timely as it is being accompanied by a request for a two-month extension of time and the appropriate fee.

Formal drawings also are being submitted herewith under separate transmittal.

II. CLAIM AMENDMENTS AND SECTION 112 REJECTION.

With respect to the §112 rejection, claims 1, 17, 23, and 26 have been amended to recite a pozzolanic "aggregate" rather than "filler" in order to avoid confusion with respect to the identity of this component of the claimed composition. The amendment finds support, for

example, on page 5, lines 4-13 which describes a preferred filler (pumice) as an aggregate.

It is respectfully submitted that those skilled in the art of making cementitious materials know that most cementitious compositions are made from a "binder" and a "filler." The binder is made from, for example, Portland cement and other finely divided materials while the "filler" is an aggregate. In other words, the "filler" component of the mixture comprises particulate material which adds volume to the composition and affects the physical property. This filler or aggregate is then bound together by the "binder." Thus, the filler component of a cementitious composition does not "fill in the voids present in the composition" as stated by the examiner on page 7, last paragraph of the official action.

In order to avoid further confusion on this issue, the claims have been amended to recite the "filler" component as an "aggregate." Further support for this amendment is found, for example, in Hawley's "Condensed Chemical Dictionary," Twelfth Edition (copyright 1993 by Van Nostrand Reinhold) which defines the term aggregate as

[a] collective term denoting any mixture of such particulates as sand, gravel, crushed stone, or cinders used in Portland cement formulations, road building, paving compositions, animal husbandry, trickle filters, horticulture, etc." (Emphasis added.)

From this definition it is apparent that the trass, pumice, perlite, fly ash, fillite, and any other "fillers" of the invention are also considered by those skilled in the art to be aggregates.

Because the finely divided silica fume component according to the invention is not an "aggregate," it is respectfully submitted that claims 1, 17, 23, and 26 should

not be considered indefinite because the silica fume component is not encompassed by the term "pozzolanic aggregate." Therefore, reconsideration and withdrawal of the 35 U.S.C. §112 rejection of claims 1, 17, 23, and 26 are respectfully requested.

Claims 2, 18, and 24 have been amended as suggested by the examiner to remove the term "substantially" therefrom. Also, claims 7, 22, and 27 have been amended as suggested by the examiner to remove the phrase "an effective amount." Therefore, reconsideration and withdrawal of the 35 U.S.C. §112 rejection of claims 2, 7, 18, 22, 24, and 27 are respectfully requested.

III. THE 35 U.S.C. SECTION 103 REJECTIONS.

A. The Law

The examiner bears the burden of establishing a *prima facie* case of obviousness and "can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." In re Fine, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Obviousness must be determined with respect to the invention "as a whole." Interconnect Planning Corp. v. Feil, 227 U.S.P.Q. 2d 543, 551 (Fed. Cir. 1985). Critical to the §103 analysis is an understanding of the particular results achieved by the invention. Id. "Not only must the claimed invention as a whole be evaluated, but so also must the references as a whole, so that their teachings are applied in the context of their significance to a technician at the time -- a technician without our knowledge of the solution." Id. When prior art references require selective combination to

render a subsequent invention obvious, "there must be some reason for the combination other than the hindsight gleaned from the invention itself." Id. Stated in another way, "[i]t is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." In re Fritch, 23 U.S.P.Q. 2d 1780, 1784 (Fed. Cir. 1992).

B. Applicant's Invention.

The invention according to the pending claims concerns cementitious compositions (including self-leveling floor compositions, road patching compositions, and water-resistant construction materials). The composition includes four components: gypsum (calcium sulfate beta-hemihydrate), Portland cement, silica fume, and a pozzolanic aggregate.

C. Claims 1-11 Are Not Made Obvious By Harris, U.S. Patent No. 4,494,990 in view of the Francis et al., Kosmatka et al. and Jorgenson Publications

"As a whole," the Harris patent discloses a cementitious composition comprising Portland cement, gypsum and a pozzolan source, which is preferably of "a high degree of fineness" and may be blast furnace slag, silica fume, and fly ash (col. 3, lines 30-37). The Harris patent does not teach or suggest the use of a pozzolanic aggregate in a cementitious mixture. In fact, the "Example No. 1" at col. 4 discloses a cement mixture in which a non-pozzolanic filler (aggregate) sand was added.

The Francis et al., Kosmatka et al., and Jorgenson publications do not supply the deficiencies of the Harris patent disclosure. Although the Francis et al. patent discloses the use of fly ash in a composition as a

pozzolanic source (and the use of perlite as a filler; col.5, lines 4-66), it provides no teaching or suggestion of the use of silica fume and a pozzolanic aggregate in a cementitious composition as recited in applicants' amended claims.

The Kosmatka et al. article disclosure of the use of both pumicites and silica fume as pozzolans which can be added to a mixture to form concrete (page 64) also fails to disclose or suggest to one skilled in the art to use both silica fume and a pozzolanic aggregate in a cementitious composition.

The Jorgenson patent fails to teach or suggest the use of a pozzolan in the floor compositions disclosed therein.

Therefore, it is respectfully submitted that one skilled in the art, when viewing Harris, Francis et al., Kosmatka et al., and Jorgenson, would not be lead to prepare a composition which requires both silica fume and a pozzolanic aggregate as recited in applicants' independent claim 1. It is respectfully submitted that only by hindsight gleaned from applicants' claimed invention would one skilled in the art be lead to the selective combination of silica fume and pozzolanic aggregate in a cementitious composition.

Furthermore, applicants submit herewith the declaration of Elisha Stav, one of the inventors, which discloses two sets of tests. In the first test, compositions according to the invention comprising both silica fume and a pozzolanic aggregate (either pumice or fillite) were compared with compositions containing silica fume and a non-pozzolanic aggregate (calcium carbonate) having a particle size similar to either the pumice or the

fillite pozzolanic aggregate. For each of the samples tested, the composition according to the application resulted in a product that had a lower density than the otherwise similar non-pozzolanic filler sample, but exhibited a higher compressive strength. (See also Example 2 on pages 10-12 of the specification.)

Of interest is the indication from the tests of products containing the fillite filler and silica fume, that appears to provide a transition zone between the pozzolanic aggregate and the surrounding cement matrix caused by surface reaction between the aggregate and the cementitious matrix (see paragraphs 11-13 of the Elisha Stav Declaration), thus strengthening the product. No such transition zone was found for products made from non-pozzolanic aggregate and silica fume.

In the second test (paragraphs 15-17 of the Stav Declaration), a composition according to the claims of the application was compared to an otherwise similar composition which included the same pozzolanic filler, but did not include silica fume. A sample made from the composition according the invention of the application exhibited a higher compressive strength than the sample which did not include silica fume.

Thus, it is respectfully submitted that accompanying declaration provides a showing of unexpected results of the composition according to the claims of the application.

For all of the reasons stated above, reconsideration and withdrawal of the 35 U.S.C. §103 rejection of claim 1 (and claims 2-11 which depend either directly or indirectly from claim 1) in view of Harris,

Francis et al., Kosmatka et al., and Jorgenson are respectfully requested.

D. Claims 1-11 and 17-27 Are Not Made Obvious By the Bentur et al. article in view of the Francis et al., Kosmatka et al. and Jorgenson Publications

The applied Bentur et al. manuscript was sent by Dr. Bentur to Elisha Stav on July 12, 1993 (see Stav Declaration, paragraph 3). At the time of filing the Information Disclosure Statement (IDS), it was not known whether the Bentur et al. manuscript had been published. Therefore, it was included in the IDS in an abundance of caution. A recent computer search revealed that the Bentur et al. article was published on July 23, 1994. Therefore, the Bentur et al. manuscript should not be considered prior art and the obviousness rejection based upon the Bentur et al. manuscript should be withdrawn.

Furthermore, on the merits, the Bentur et al. manuscript fails to disclose or suggest the use of a pozzolanic aggregate. As discussed in Section III. C., *supra*, the Francis et al., Kosmatka et al., and Jorgenson publications do not supply this deficiency. Therefore, for the same reasons as stated with respect to the §103 rejection of claims 1-11 based upon the Harris, Francis et al. Kosmatka et al. and Jorgenson references, reconsideration and withdrawal of this §103 rejection of claims 1-11 and 17-27 are respectfully requested.

IV. THE OBVIOUSNESS-TYPE DOUBLE PATENTING REJECTIONS

It is respectfully submitted that copending application Ser. No. 08/253,333 will be allowed to abandon, rendering moot the provisional obviousness-type double patenting rejections.

V.

CONCLUSION

For the reasons stated above, entry of the amendments to claims 1, 2, 7, 17, 18, 22-24, 26, and 27, reconsideration and withdrawal of all of the grounds for rejection to the claims, and allowance of pending claims 1-11 and 17-27 are solicited.

Should the examiner wish to discuss the foregoing or any matter of form in an effort to advance this application toward allowance, he is urged to telephone the undersigned at the indicated number.

Respectfully submitted,

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